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Perhaps I may be permitted to remark that a few years ago the large proper motion in R.A. of one of the stars in question, Groombridge 3511, inserted in the British Association Catalogue, appeared to me to be much too great, and consequently a new value was determined by comparing the Groombridge place with that observed in recent years at Greenwich. This new value has been referred to in a footnote on page 16 of the annual star Catalogue in the volume of *Greenwich Observations* for 1871 as follows:—"The proper motion, $+0^{s}\cdot049$, adopted for this star is determined from a comparison of the R.A. in Groombridge's Catalogue with the R.A. from Greenwich observations made between 1871, October 17, and 1873, March 27. The value, $+0^{s}\cdot119$, inserted in the British Association Catalogue, appears to be erroneous." A more recent comparison of the Groombridge and Radcliffe places with the observations made at Greenwich from 1871 to 1875 gives respectively for the annual proper motion in R.A. $+0^{s}\cdot048$ and $+0^{s}\cdot053$. To these I add another determination from recent Greenwich observations only, from four made in 1860 and 1861, and seven made since the beginning of 1871. The result is remarkably accordant with the others, though the interval is only twelve years.

	Annual Proper Motion in R.A. s	Annual Proper Motion in N.P.D. "
Groombridge with Greenwich (1872)	+0·048	−0·01
Radcliffe „ „	+0·053	+0·07
Greenwich (1860–61) „	+0·049	+0·05

The means of these values are respectively $+0^{s}\cdot050$ in R.A. and $+0''\cdot043$ in N.P.D.

The evidently erroneous values, $+0^{s}\cdot119$ and $-0''\cdot10$, given in the British Association Catalogue having been employed by M. Flammarion in his investigation, his conclusions respecting the probable physical association of these two Groombridge stars will require some reconsideration.

Kidbrooke, Blackheath,
1877, *October* 30.

Note upon the Proper Motion of Groombridge 3511.

By Prof. T. H. Safford.

The supposed proper motion of the star Groombridge 3511

$$+0^{s}\cdot119 \quad \text{and} \quad +0''\cdot10$$

in Right Ascension and Declination respectively, as given in the British Association Catalogue, is derived from the comparison of

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Pond's position for 1830 with that of Groombridge 1810. It is, however, too large, and the component in Declination has the wrong sign, as will appear from the following tabulation of the positions for 1855, as brought up in Argelander's manner, by the application, namely, of the systematic corrections given in volume vii. (Introduction) of the Bonn observations, and of precession, secular variation, and the third term of the series as computed by means of Bessel's constants of precession, and an approximate position for 1855.

The precession formulæ from 1855 to $1855+t$ are for this star,

$$\alpha'-\alpha = -1^{s}\cdot52163\,t-0^{s}\cdot2656\,\frac{t^2}{200}-0^{s}\cdot537\left(\frac{t}{100}\right)^3,$$

$$\delta'-\delta = +15''\cdot8540\,t-0''\cdot1435\,\frac{t^2}{200}-0''\cdot427\left(\frac{t}{100}\right)^3.$$

In the following table the later observations receive only approximate systematic corrections, and in Declination zero; as Argelander found large discrepancies near the Pole, owing to the few stars of the *Tabulæ Reductionum* in that region. The observations denoted by H. C. were made at Cambridge, partly by myself, and reduced by the help of the *Berliner Jahrbuch.*

I have here at my command an old transit instrument by Simms, and will observe the star again so soon as the instrument shall be repaired. The error in the B.A.C. proper motion, like that of many other stars, was noted by me long ago; and I have in hand a series of several hundred stars the proper motion whereof has been incompletely discussed elsewhere, of which this is one.

The columns C—O contain the differences in hundredths of seconds of time and in seconds of space respectively from the formulæ

$$\alpha = 21^{h}\;28^{m}\;57^{s}\cdot09+0^{s}\cdot016\,(t-1855),$$

$$\delta = 79^{\circ}\;53'\;29''\cdot2\;-0''\cdot018\,(t-1855).$$

The resulting annual proper motion, $+0^{s}\cdot016$ (in R.A.) and $-0''\cdot018$ in Declination, is still a little uncertain in amount.

The collection of observations may be very easily incomplete, as I have not at hand all the Catalogues which probably contain the star.

Williams College, Williamstown, Mass., U.S.A.,
September 21, 1877.

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Catalogue.	Epoch. Obs.	Epoch. Pos.	R.A. at Epoch.	Corr.	Decl. at Epoch.	Corr.	Position, 1855.		No. of Obs.	C−O R.A.	C−O Decl.
			h m s	s	° ′ ″	″	h m s	° ′ ″			
F	1790·1	1790	21 30 30·67	+0·026	79 36 17·78	+0·17	21 28 57·25	79 53 31·2	4	−120	−0·8
L.L.	1790·4	1800	30 15·35	+0·768	38 59·95	+0·50	56·36	33·5	2	− 31	−3·1
Gr.	1809·7	1810	30 0·18	+0·726	41 32·4	+1·31	55·07	28·6	6	+130	+1·4
Pd.	1830·9	1830	...	...	46 51·77	+0·49	...	29·1	8	...	+0·5
	1831·7	1831	29 32·07	−0·037	47 8·55	+0·49	56·27	29·9	24	+ 45	−0·3
	1832·8	1832	29 31·01	−0·037	...	...	56·67	...	5	+ 6	...
Pulk.	1842·2	1845	29 12·13	+0·038	...	...	57·08	...	2	− 19	...
R.C.	1850·7	1845	...	...	50 49·6	+1·26	...	29·5	7	...	−0·2
	1851·8	1845	29 12·11	+0·014	...	...	57·04	...	4	...	...
R.C.$_2$	1855·7	1860	...	...	54 49·1	+1·26	...	31·1	6	...	−1·9
	1857·1	1860	28 49·67	+0·03	...	...	57·34	...	3	− 22	...
Arg.	1860·6	1860	28 49·27	+0·001	54 47·54	0·0	56·91	28·3	2	+ 27	+0·8
	1861·8	1864	28 43·09	+0·011	55 51·64	0·0	56·89	29·0	2	+ 31	0·0
H.C.	1865·7	1865	28 42·163	0·000	...	...	57·51	...	10	− 25	...
Arg.	1873·4	1873	28 29·51	+0·011	58 13·47	0·0	57·34	28·3	3	+ 4	+0·6
Main	1874·7	1874	28 28·17	+0·055	58 29·92	0·0	57·62	29·0	13	− 21	−0·2

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Additional Note concerning 3511 *Groombridge.*

Since writing my former Note upon this star's proper motion, I have received, by Professor Holden's kindness, the extracts from Struve's observations (1814–15) and Schwerd's Catalogue (Oeltzen) which relate to it. The following are the results:—

Catalogue.	Epoch. Obs.	Epoch. Pos.	R.A. at Epoch.	Corr.	Decl. at Epoch.	Corr.	Position, 1855.		No. of Obs.	C−O R.A.	C−O Decl.
			h m s	s	° ′ ″	″	h m s	° ′ ″			
Str.	1814·7	1815	21 29 54·98	+0·209	...	...	21 28 56·38	...	7	+7	...
Schw.	1828·	1828	29 36·683	+0·043	79 46 20·6	0·0	56·60	79 53 29·2	3	+6	+0·5

It will be seen that Struve and Schwerd agree very nearly with the formula deduced in the previous Note; the discrepancies in Right Ascension, $+0^s{\cdot}07$ and $+0^s{\cdot}06$ respectively, are both less than $0''{\cdot}2$ of space, so that I have thought it unnecessary to make a new least-square solution.

Williamstown, Mass.,
September 26, 1877.